AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A system for improving the performance of a distance-type protective relay for power systems, wherein the relay includes a calculation circuit responsive to voltage and current values from the power line to produce a quantity analogous to the distance between the relay and a fault on the power line, wherein the quantity is applied to a distance element for comparison of said quantity with a setting reach value for a selected zone of protection, the system comprising:

a filter circuit responsive to said quantity for filtering said quantity before the quantity is applied to the distance element, resulting in noise attenuation of the quantity; and

a control circuit for controlling the application of the filtered quantity to the distance element such that the filtered quantity is applied only when said quantity is above a preselected first threshold value and below a preselected second threshold value.

2. (Previously Presented) The system of claim 1, wherein the preselected first threshold value is a selected percentage of the setting reach value.

3. (Previously Presented) The system of claim 2, wherein the selected percentage is 100% minus an error of the system plus 5% for the relay.

4. (Canceled)

5. (Previously Presented) The system of claim 2, wherein the selected percentage is approximately 92%.

6. (Currently Amended) The system of claim 1, further comprising wherein said quantity is a high value, significantly higher than said setting reach value, when there is no fault on the power line, and wherein the system includes a circuit for pre-charging the filter to the preselected second threshold value when said quantity decreases to the preselected second threshold value from said high value, in response to a fault.

7. (Previously Presented) The system of claim 1, wherein the preselected second threshold value is approximately four times the setting reach value.

8. (Currently Amended) An apparatus for selecting one of a ~~first distance~~ <u>filtered m</u> value and ~~a second distance~~ <u>an unfiltered m</u> value provided to a distance element of a protective relay providing protection for a transmission line of a power system, the protective relay including a calculation circuit adapted to provide the ~~first distance~~ <u>unfiltered m</u> value indicative of a distance between the protective relay and a fault, and a filter adapted to filter the ~~first distance~~ <u>unfiltered m</u> value to form the ~~second distance~~ <u>filtered m</u> value, the apparatus comprising:

a first comparator including an output determined by a first input configured to receive the ~~first distance~~ <u>unfiltered m</u> value and a second input configured to receive a first percentage of a zone reach value, the first percentage of the zone reach value greater than the zone reach value;

a second comparator including an output determined by a first input adapted to receive the ~~first distance~~ <u>unfiltered m</u> value and a second input adapted to receive a second percentage of the zone reach value, the second percentage of the zone reach value less than the zone reach value; <u>and</u>

~~an AND-gate including a first input coupled to the output of the first comparator, a second inverting input coupled to the output of the second comparator and an output; and~~

~~an OR-gate including a first inverting input coupled to the output of the AND-gate, a second input coupled to the output of the second comparator and an output.~~

<u>a logic circuit coupled to the first comparator and the second comparator, the logic circuit providing a switched output, the switched output being either the filtered m value or the unfiltered m value based on the values of the first comparator and the second comparator.</u>

9. (Canceled)

10. (Currently Amended) The apparatus of claim 8, wherein the filter is charged immediately after the ~~first distance~~ <u>unfiltered m</u> value is equal to or less than the first percentage of the zone reach value, the ~~first distance~~ <u>unfiltered m</u> value equaling the first percentage of the preselected setting indicating an occurrence of a fault in the transmission line.

11. (Currently Amended) The apparatus of claim 8, wherein filter operation is defined by $ms_k = 0.6*m_k + 0.4*ms_{k-1}$~~, and wherein ms_{k-1} is equal to the first percentage of the zone reach value and m_k is equal to a present value of the first distance value upon a transition of the output of the OR-gate from a binary low value to a binary high value.~~

12. (Canceled)

13. (Canceled)

14. (Currently Amended) A method for selecting between one of ~~a first distance~~ an unfiltered m value and a ~~second distance~~ filtered m value provided to a distance element of a protective relay providing protection for a transmission line of a power system, the protective relay including a calculation circuit adapted to provide the ~~first distance~~ unfiltered m value indicative of a distance between the protective relay and a fault, and a filter adapted to filter the ~~first distance~~ unfiltered m value to form the ~~second distance~~ filtered m value, the method comprising:

comparing the ~~first distance~~ unfiltered m value to a first percentage of a zone reach value to form a first binary output, the first percentage of the zone reach value greater than the zone reach value~~, the zone reach value~~;

providing the ~~first distance~~ unfiltered m value to the distance element when the first binary output comprises a low binary value or when the second binary output comprises a high binary value; and

providing the ~~second distance~~ filtered m value to the distance element when the first binary output comprises a high binary value and the second binary output comprises a low binary value.

15. (Currently Amended) The method of claim 14, wherein the first binary output has a binary high value when the first percentage of the zone reach value is greater than the ~~first distance~~ unfiltered m value, and has a binary low value when the first percentage of the zone reach value is less than the ~~first distance~~ unfiltered m value, and wherein the second binary output has a binary high value when the second percentage of the zone reach value is greater than the ~~first distance~~ unfiltered m value, and has a binary low value when the second percentage of the zone reach value is less than the ~~first distance~~ unfiltered m value.

16. (Currently Amended) The method of claim 14, wherein the filter is charged immediately after the ~~first distance~~ unfiltered m value is equal to or less than the first percentage of the zone reach value, the ~~first distance~~ unfiltered m value equaling the first percentage of the preselected setting indicating an occurrence of a fault in the transmission line.

17. (Currently Amended) The method of claim 14, wherein the filter operation is defined by $ms_k = 0.6 \cdot m_k + 0.4 \cdot ms_{k-1}$, ~~and wherein ms_{k-1} is equal to the first percentage of the zone reach value and m_k is equal to a~~

~~present value of the first distance value upon a transition from the first distance value greater than the first~~

~~percentage of the zone reach value to the first distance value less than first percentage of the zone reach~~

~~value.~~

18. (Canceled)

19. (Canceled)